PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference P04635500	FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/JP 03/15015	International filing date *(day/month/year)* 25.11.2003	Priority date *(day/month/year)* 28.11.2002
International Patent Classification (IPC) or both national classification and IPC G01N3/32		
Applicant YAZAKI CORPORATION		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 5 sheets, including this cover sheet.

   ☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

   These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:

   - I ☒ Basis of the opinion
   - II ☐ Priority
   - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
   - IV ☐ Lack of unity of invention
   - V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
   - VI ☐ Certain documents cited
   - VII ☐ Certain defects in the international application
   - VIII ☐ Certain observations on the international application

Date of submission of the demand	Date of completion of this report
24.06.2004	19.01.2005
Name and mailing address of the international preliminary examining authority: European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016	Authorized Officer Radev, B Telephone No. +31 70 340-3682

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/JP 03/15015

I. Basis of the report

1. With regard to the **elements** of the international application *(Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17))*:

Description, Pages

1-33 as originally filed

Claims, Numbers

1-15 as originally filed

Drawings, Sheets

1/7-7/7 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

   These elements were available or furnished to this Authority in the following language: , which is:

   ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).

   ☐ the language of publication of the international application (under Rule 48.3(b)).

   ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

   ☐ contained in the international application in written form.

   ☐ filed together with the international application in computer readable form.

   ☐ furnished subsequently to this Authority in written form.

   ☐ furnished subsequently to this Authority in computer readable form.

   ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

   ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

   ☐ the description, pages:

   ☐ the claims, Nos.:

   ☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

   (Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-15
	No:	Claims	
Inventive step (IS)	Yes:	Claims	1-15
	No:	Claims	
Industrial applicability (IA)	Yes:	Claims	1-15
	No:	Claims	

2. Citations and explanations

   see separate sheet

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

Reference is made to the following document:

D1: EP-A-1 236 989 (SUMITOMO WIRING SYSTEMS ;SUMITOMO ELECTRIC INDUSTRIES (JP)) 4 September 2002 (2002-09-04)

The document D1 is regarded as being the closest prior art to the subject-matter of claim 1, and shows (the references in parentheses applying to this document) a computer implemented method to predict the bending lifespan of a plurality of wires (par. 1), at least two points of the plurality of wires being constrained (fig. 23), the method comprising the steps of calculating the stress of wires by using the finite element method (par. 21, lines 1-2) and calculating the estimated value of flexure life based on the stress (par. 21, lines 10-12) taking into account the temperature of the environment (fig. 19).

The subject-matter of claim 1 differs from the teaching of D1 in that D1 does not disclose that the bending of the wires is induced by vibration. D1 does not disclose any natural frequencies computation step, neither does it disclose that the vibration analysis is performed for each of the plurality of wires.

The subject-matter of claim 1 is therefore new (Article 33(2) PCT).

The problem to be solved by the present invention may be regarded as how to estimate the life span of wires induced by vibration.

The solution to this problem proposed in claim 1 of the present application is considered as involving an inventive step (Article 33(3) PCT) because D1 does not regard the vibration as a factor for decreasing the life span of wires. On the contrary, D1 concentrates on bending caused by other activities e.g. opening and closing of doors. (par. 131). D1 further teaches the modelling of a plurality of wires as a single virtual wire (abstract) and therefore calculating the stress for said wire, while claim 1 comprises a step of calculating the maximum stress for each wire in the wire harness. The skilled man would also have no reason to combine the teaching of D1 with that of another document. Therefore the skilled person starting from D1 would not arrive at the subject-matter of claim 1 in order to solve the problem of predicting the life span of a

wire induced by vibration.

The same reasoning applies mutatis mutandis to the subject-matter of the corresponding claims 7, 13, 15 which also meets the requirements of Article 33 PCT.

Claims 2 - 6 are dependent on claim 1, claims 8 - 12 are dependent on claim 7 and claim 14 is dependent on claim 13 and as such also meet the requirements of the PCT with respect to novelty and inventive step.